

Appl. No. 10/748,315
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Reply to Office Action of June 30, 2005

REMARKS

Claims 3, 7, 10, 13 and 16-17 have been amended. Claims 1-17 remain pending in the application.

Claim Objections

Claims 7 and 10 are objected to because of the following informalities: claim 7 recited inter alia "...and a bottom surface opposite to the light incident surface..." and claim 10 recited "...a light guide plate having a light input surface for...".

By the above amendments, applicant has amended claims 7 and 10 in order to overcome the objection thereto. Amended claim 7 now recites "...and a bottom surface opposite to the light output surface..." and amended claim 10 now recites "...a light guide plate having a light incident surface for..."

It is submitted that the claim language now properly recites the subject matter. Reconsideration and withdrawal of the objection of are respectfully requested.

Claim Rejections Under 35 U.S.C. 102

Claims 1 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6,283,602 B1 (Kawaguchi et al).

In response to the rejection, applicant submits that claims 1 and 15 are allowable over Kawaguchi et al, as follows:

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Claim 1 recites in part:

...a micro-lens located between the point light source and the light incident surface...wherein the light guide plate and the point light source are placed at respective working distances from the micro-lens...

Applicant submits that Kawaguchi et al does not disclose, teach, or otherwise suggest the invention as currently recited in claim 1.

Kawaguchi et al does disclose a lighting device that has a planar light guide 101 and point-source lights 102 which are positioned to face a light incident surface 101a of the light guide 101 (column 1, lines 25-28, see FIG. 10). However, Kawaguchi et al does not disclose or suggest a surface lighting device in which “...a micro-lens is located between the point light source and the light incident surface...wherein the light guide plate and the point light source are placed at respective working distances from the micro-lens...” First, Kawaguchi et al simply teach lenses 103 of the lighting device, which are concavities of the light guide 101. The lenses 103 are different from the solid, freestanding micro-lenses located between the point light source and the light incident surface recited in claim 1. Second, the lenses 103 are part of the light guide 101, whereas in claim 1 the light guide plate and the point light source are placed at respective working distances from the micro-lenses. Accordingly, these differences indicate that Kawaguchi et al fails to teach or suggest the surface lighting device as recited in claim 1.

In summary, there is nothing in the cited reference that teaches or suggests to one of ordinary skill in the art that they might or should provide the surface lighting device of claim 1. Furthermore, the surface lighting device as recited in claim 1 produces new and unexpected results. That is,

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divergent light beams emitted from the light sources are changed into parallel rays by passing through the micro-lenses. Light beams directed into the light guide plate are more uniform, thus enabling the surface lighting device to provide uniform illumination.

Accordingly, claim 1 is submitted to be novel, unobvious and patentable over Kawaguchi et al under both s.102(b) and s.103. Reconsideration and withdrawal of the rejection and allowance of claim 1 are respectfully requested.

Claim 15 recites the limitation of "...a lens located between the light source and the light incident surface...wherein the light guide plate and the point light source are placed at respective working distances from the lens..." This limitation is similar to the corresponding limitation of claim 1 detailed above. For reasons similar to those asserted above in relation to claim 1, applicant submits that claim 15 should also be allowable.

Claim Rejections Under 35 U.S.C. 103

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,283,602 B1 (Kawaguchi et al).

By the above amendment, applicant has amended claim 10. Applicant respectfully traverses the rejection, and submits that the invention of amended claim 10 would still not have been obvious in view of the cited reference. In particular, applicant asserts as follows:

Amended claim 10 recites in part:

...micro-lenses are positioned between the point light sources and the light incident surface...

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This limitation is similar to the corresponding limitation of claim 1 detailed above. For reasons similar to those asserted above in relation to claim 1, applicant submits that this limitation of amended claim 10 is not found or taught in Kawaguchi et al. There is nothing in the cited reference that teaches or suggests to one of ordinary skill in the art that they might or should provide the liquid crystal display device of amended claim 10.

Furthermore, the liquid crystal display device as recited in amended claims 10 produces new and unexpected results. That is, divergent light beams emitted from the light sources are changed into parallel rays by passing through the micro-lenses. Light beams directed into the light guide plate are more uniform, thus enabling the surface lighting device to provide uniform illumination.

Accordingly, amended claim 10 is submitted to be unobvious and patentable over Kawaguchi et al under s.103. Reconsideration and withdrawal of the rejection and allowance of amended claim 10 are respectfully requested.

Claims 2-7, 11-14 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi as applied to claims 1, 10 and 15 above, and further in view of US 5,745,519 (Ruda et al).

By the above amendment, applicant has amended claims 3, 7, 13 and 16-17. Applicant respectfully traverses the rejection, and submits that the invention of claims 2, 4-6, 11-12, 14, and amended claims 3, 7, 13, 16-17 would still not have been obvious in view of the cited references. In particular, applicant asserts as follows:

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Claims 2, 4-6 and amended claims 3 and 7 depend directly or indirectly from claim 1; claims 11-12, 14 and amended claim 13 depend directly or indirectly from amended claim 10; and claims 16-17 depend directly and indirectly from claim 15. Both claims 1 and 15 recite "...a micro-lens located between the point light source and the light incident surface...wherein the light guide plate and the point light source are placed at respective working distances from the micro-lens..." and amended claim 10 recites that "...micro-lenses are positioned between the point light sources and the light incident surface..." For reasons similar to those asserted above, these limitations of claims 1, 15 and amended claim 10 are not found or taught in Kawaguchi et al in view of Ruda et al. In particular, the teachings of Ruda do not provide any subject matter in addition to Kawaguchi or additional motivation to one of ordinary skill in the art to modify Kawaguchi in a way that could provide the surface lighting device of claims 1, 15 or 10. That is, there is nothing in the cited references that teaches or suggests to one of ordinary skill in the art that they might or should be combined to provide the surface lighting device of claims 1, 15 and amended claim 10.

Furthermore, the surface lighting device as recited in claims 1, 15 and the liquid crystal display as recited in amended claim 10 produce new and unexpected results. That is, divergent light beams emitted from the light sources are changed into parallel rays by passing through the micro-lenses. Light beams directed into the light guide plate are more uniform, thus enabling the surface lighting device and the liquid crystal display to provide uniform illumination.

Accordingly, claims 1, 15 and amended claim 10 are submitted to be unobvious and patentable over Kawaguchi et al in view of Ruda et al under s.103. Reconsideration and withdrawal of the rejection and allowance of

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dependent claims 2, 4-6, 11-12, 14, and amended dependent claims 3, 7 and 13, 16-17 are respectfully requested.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi and Ruda as applied to claims 1-7 and 10-17 above, and further in view of US 6,533,440 B2 (Koyama et al).

Applicant respectfully traverses the rejection, and submits that the invention of claim 8 would not have been obvious in view of the cited references. In particular, applicant asserts as follows:

Claim 8 depends indirectly from claim 1, which recites "...a micro-lens located between the point light source and the light incident surface...wherein the light guide plate and the point light source are placed at respective working distances from the micro-lens..." For reasons similar to those asserted above, claim 1 is submitted to be novel, unobvious and patentable over Kawaguchi et al and Ruda et al in view of Koyama et al under s.103. In particular, the teachings of Koyama et al do not provide any subject matter in addition to Kawaguchi and/or Ruda or additional motivation to one of ordinary skill in the art to modify Kawaguchi and/or Ruda in a way that could provide the surface lighting device of claim 1. Reconsideration and withdrawal of the rejection and allowance of dependent claim 8 are respectfully requested.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi and Ruda as applied to claims 1-7 and 10-17 above, and further in view of JP 2002-93222.

Applicant respectfully traverses the rejection, and submits that the

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invention of claim 9 would not have been obvious in view of the cited references. In particular, applicant asserts as follows:

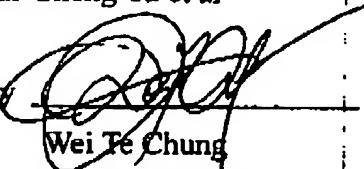
Claim 9 depends indirectly from claim 1, which recites "...a micro-lens located between the point light source and the light incident surface...wherein the light guide plate and the point light source are placed at respective working distances from the micro-lens..." For reasons similar to those asserted above, claim 1 is submitted to be novel, unobvious and patentable over Kawaguchi et al and Ruda et al in view of JP 2002-93222 under s.103. In particular, the teachings of JP 2002-93222 do not provide any subject matter in addition to Kawaguchi and/or Ruda or additional motivation to one of ordinary skill in the art to modify Kawaguchi and/or Ruda in a way that could provide the surface lighting device of claim 1. Reconsideration and withdrawal of the rejection and allowance of dependent claim 9 are respectfully requested.

In view of the foregoing, the present application as claimed in the pending claims is considered to be in a condition for allowance, and an action to such effect is earnestly solicited.

Respectfully submitted,

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